

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

**(19) World Intellectual Property
Organization
International Bureau**



(43) International Publication Date
21 July 2005 (21.07.2005)

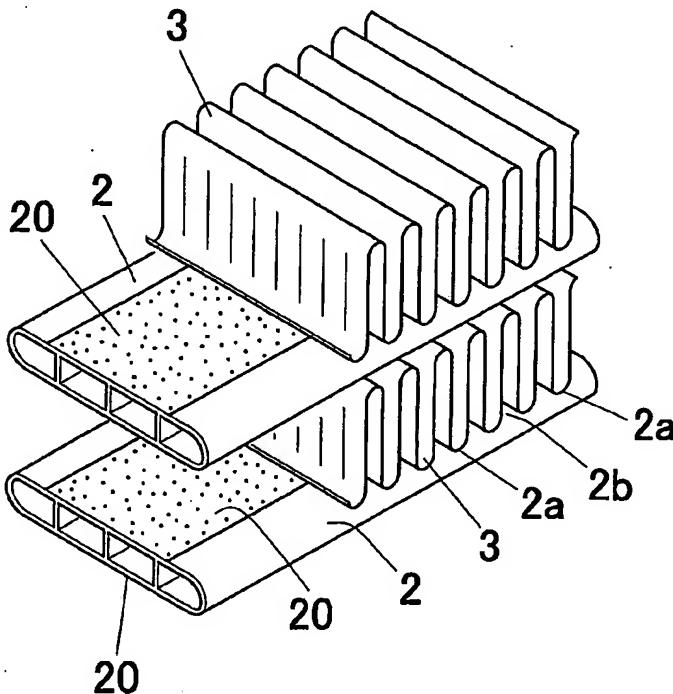
PCT

(10) International Publication Number
WO 2005/066570 A1

- (51) **International Patent Classification⁷:** **F28F 19/06,**
F28D 1/053, F28F 1/02, 1/30
- (21) **International Application Number:**
PCT/JP2005/000433
- (22) **International Filing Date:** 7 January 2005 (07.01.2005)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
2004-4542 9 January 2004 (09.01.2004) JP
60/537,006 20 January 2004 (20.01.2004) US
- (71) **Applicant (for all designated States except US):** **SHOWA DENKO K.K.** [JP/JP]; 13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518 (JP).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **MINAMI, Kazuhiko** [JP/JP]; c/o Oyama Regional Office, Showa Denko K.K., 480, Inuzuka 1-chome, Oyama-shi, Tochigi 323-8678 (JP). **YAMANOI, Tomoaki** [JP/JP]; c/o Oyama Regional Office, Showa Denko K.K., 480, Inuzuka 1-chome, Oyama-shi, Tochigi, 323-8678 (JP).
- (74) **Agents:** **SHIMIZU, Hisayoshi** et al.; Idemitsu Nagahori Building, 4-26, Minamimemba 3-chome,, Chuo-ku, Osaka-shi Osaka 542-0081 (JP).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

- (54) Title:** HEAT EXCHANGER, METHOD FOR MANUFACTURING THE SAME, AND HEAT EXCHANGING TUBE



(57) Abstract: The present invention is directed to a method for manufacturing a heat exchanger in which a Zn thermally sprayed layer is formed on a surface of an aluminum flat tube 2 and then the Zn thermally sprayed tube is combined with an aluminum corrugated fin and brazed to the fin. The Zn thermally sprayed tube 2 is subjected to a Zn diffusion treatment by heating the tube before the brazing to diffuse the Zn in the tube surface, and thereafter the brazing is performed. The heat exchanger manufactured in this way can assuredly have a stable sacrifice corrosion layer and is excellent in corrosion resistance. The heat exchanger can be manufactured efficiently without major facility changes at low cost.



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.